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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/650,878	08/30/2000	Chris S. Brunt		2147

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[REDACTED] EXAMINER

RO, BENTSU

[REDACTED] ART UNIT [REDACTED] PAPER NUMBER

2837

DATE MAILED: 01/17/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application N .	Applicant(s)
	09/650,878	BRUNT ET AL
	Examiner Bentsu Ro	Art Unit 2837

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on _____.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-12 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) 11 is/are allowed.
- 6) Claim(s) 1-3,5-10 and 12 is/are rejected.
- 7) Claim(s) 4 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 - a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input checked="" type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

FIRST OFFICE ACTION

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
2. Claims 2, 3, 5-7, 9 and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

These claims are rejected because of improper dependency and/or other indefinite problems, see the following explanation.

- Claim 2, line 1, the preamble "The pump of Claim 1" is improper. The preamble of claim 1 is defined as "A controller", therefore, claim 2 should have the same preamble, namely, "The controller of Claim 1".
- Claim 3, line 1, the preamble "The rotor and impeller assembly of claim 2" should be changed to --The controller of claim 2--.
- Claim 3, lines 1-2, the recitation "said rotor and said impeller" lacks antecedent basis. This phrase should be changed to --said rotor and impeller assembly--.
- Claim 3, line 3, the recitation "said rotor and said impeller" lacks antecedent basis. This phrase should be either changed to --the rotor and the impeller-- or define the "rotor" and the "impeller" earlier in the claims.
- Claim 5, line 1 should be changed to --The controller of claim 1, wherein said output switching circuit comprising a multiplicity--.
- Claim 6, line 1, change the preamble to --The controller of claim 5--.
- Claim 7, last line, the element "said motor switch" is defined in claim 4, therefore, claim 7 should be amended to depend upon claim 4, not claim 1.
- Claim 9, last line, the elements "said analog to digital converter" and "said audio circuitry" are defined in claim 7, therefore, claim 9 should be amended to depend on claim 7.
- Claim 10, line 1, change the preamble "The micro-controller" to --The controller--.

- Claim 10, line 3, the recited element “said mode switch” is defined in claim 4. Lines 3-4, the recited elements “said first potentiometer and said second potentiometer” are defined in claim 7. Therefore, claim 10 should be amended to depend on claim 7. (Claim 7 should be amended to depend on claim 4 as mentioned previously.)

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1 and 8 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over **Slate et al US Patent No. 4,919,596**.

Before explaining the rejection, the examiner want to make the following comments with respect to the dc motors, especially the fractional horsepower dc motors.

The dc motors can generally be classified into two categories:

- a. Brush dc motor. This type of motor has a permanent magnet stator, an armature winding (or a rotor), and a commutators/brushes assembly. The speed of this motor depends on the torque applied to the motor shaft. Therefore, this motor is not a constant speed motor.
- b. Brushless dc motor. This type of motor has a permanent magnet rotor and a stator with phase windings. This motor requires an electronic commutation, namely, a rotor position sensor and an inverter controlled by the signals from the rotor position sensor. The motor speed/torque can be controlled by the frequency of the pulse width modulation of the inverter, therefore, this motor is a synchronous motor.

The so-called “AC permanent-magnet synchronous motor” (or AC PMSM) defined by applicant is actually a brushless dc motor of the type b above.

Claim 1 reads onto Slate et al teaching as follows:

Claim 1:

A controller for varying the flow rate of a pump in a predetermined manner, comprising:

a programmable micro controller for calculating the pulse width and frequency timing for generating pulse switching signals to control said pump; and

an output switching circuit for generating a pulsed waveform for driving said pump according to said pulse switching signals.

It is noted that Slate et al teach “DC motors” (see column 3, line 37, for example) and “pulse width” (see column 6, line 48, for example). These together show that Slate’s motor is an AC PMSM as defined by applicant.

Regarding claim 8, Slate’s Figs. 1, 2, 5 all show input “commands”. These input commands receive input information via various means, such as an input knob, a potentiometer or a key pad. These input knob, potentiometer, key pad are line receiver/transmitter interfaces.

6. Claim 1 is rejected under 35 U.S.C. 102(b) as being clearly anticipated by **Hampton et al US Patent No. 5,269,659**.

Claim 1 reads onto Hampton et al teaching as follows:

Claim 1:

Hampton et al teaching:

Fig. 5 shows a controller for controlling the flow rate of a pump; the pump is a cassette type piston fluid pump, see column 4, lines 62-65; Fig. 3 shows a pumping cycle, which is a “predetermined manner” as claimed; Fig. 5 also shows a “RATE COMMAND” input which is another “predetermined manner”;

Fig. 5 shows a microprocessor 70 and a pulse generator 78; a signal “PULSE WIDTH” is inputted to the pulse generator 78;

Fig. 5 further shows a motor driver 80.

A controller for varying the flow rate of a pump in a predetermined manner, comprising:

a programmable micro controller for calculating the pulse width and frequency timing for generating pulse switching signals to control said pump; and

an output switching circuit for generating a pulsed waveform for driving said pump according to said pulse switching signals.

It is noted that Hampton et al repeatedly teach "pulse width" (see abstract; column 1, lines 45-47; column 3, line 15; column 4, lines 38, 43, 48, 51, 56; column 5, line 21; etc.). Column 4, lines 47-49 also shows "[T]he pulse width modulator used to implement pump motor drive circuit 123 produces pulses of predetermined frequency and a nominal width." These all together indicate that Hampton et al motor is an AC PMSM as defined by applicant.

7. Claims 2, 3, 5, 6, 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hampton et al.

Regarding claim 2, Hampton's motor is an AC permanent-magnet synchronous motor as explained in paragraph 6 above. Hampton's Fig. 1 further shows a pump 104. The rotor is inside the pump motor 105, the impeller is inside the pump 104.

Regarding claim 3, a rigid coupling is required for almost all motor/pump systems.

Regarding claim 5, albeit not shown a brushless dc motor requires an inverter as explained previously in paragraph 5 above. For example, a three-phase inverter has six power transistors arranged in three half-bridges. Each half bridge constitute two transistors and can be arranged in a push-pull configuration.

Regarding claim 6, the most frequently used power transistors are field effect transistors (FETs) and insulated-gate bipolar transistors (IGBTs), which is a well known art.

Fig. 1 shows an air sampling pump system 100, the system includes a flowrate reference 121 for setting a desired flowrate and a timer 118 for setting activation time, these two alone or together constitute a "predetermined manner";

Fig. 1 shows a pump motor drive circuit 123; the pulse width and frequency are produced by the drive circuit 123, see column 4, lines 47-49;

Fig. 2 shows a program or flowchart;

the switching circuit is inside the drive circuit 123.

Regarding claim 8, the setting of the timer 118 (such as rotary wheels) is a line receiver/transmitter interface.

8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Slate et al or Hampton et al.

Claim 12 has the same subject matter of claims 1 and 2 and further includes a fountain element.

Regarding claim 12, neither Slate nor Hampton teach a fountain element. However, a fountain element is a well known art. A fountain element worked together with a motor is also a well known art.

In view of the foregoing, it would have been obvious to a skilled person in the art to use Slate or Hampton motor and controller to control a fountain element in a fountain to achieve the same subject matter as claimed.

A special message from the examiner:

Claims 1-12 are restrictable into two groups, one for motor controller and another for fountain.

This examiner basically examines the motor and the controller. This examiner is not mastered in the art of fountain, therefore, the fountain of claim 12 should be restricted and excluded from this application.

For the time being, the examiner does not make such a restriction requirement. In applicant's response, if applicant argues that "fountain" or "fountain element" as allowable subject matter over either Slate or Hampton teaching, then the examiner will make a restriction requirement to exclude claim 12 from this prosecution.

9. Drawing correction is required. In Fig. 1, applicant should label the function of each box. For example, label box 100 as "fountain display element", box 130 as "pump", etc. The boxes 170 and 180 are too small, yet the legend can be placed outside the box.

10. Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. Claim 11 is allowable.

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

13. Any inquiry concerning this communication should be directed to Bentsu Ro at telephone number (703) 308-3656.

January 11, 2002

Bentsu Ro
BENTSU RO
PRIMARY EXAMINER